SAN DIEGO CACTUS WREN (*Campylorhynchus brunneicapillus sandiegensis*)

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Criteria Scores

Population Trend	Range Trend	Population Size	Range Size	Endemism	Population Concentration	Threats
20	10	10	10	7.5	5	20

Special Concern Priority

Currently considered a bird species of special concern (year round), priority 1. Included on CDFG's (1992) unprioritized list but not on the original prioritized list (Remsen 1978).

Breeding Bird Survey Statistics for California

Data inadequate for trend assessment (Sauer et al. 2000).

General Range and Abundance

The San Diego Cactus Wren has a very limited range, extending from extreme northwestern Baja California (Valle de las Palmas) north through the coastal lowland of San Diego County. The northern limit of the range is uncertain because of the lack of specimens from northwestern San Diego County and most of Orange County. Differences in song (slower frequency and lower pitch in *sandiegensis*) and visual assessments of birds in the field (K. L. Weaver pers. comm.) suggest that southern Orange County is the northern limit of the subspecies' range. Specimens from extreme northern Orange County are *C. b. anthonyi*, not *sandiegensis* (Rea and Weaver 1990). Most of the range of the subspecies south of the Mexican border has been covered by the city of Tijuana, so the long-term survival and viability of the population in Baja California is doubtful. In northwestern Baja California, there is a wide gap in which Cactus Wrens are rare or absent between the southern end of the range of *C. b. sandiegensis* and the northern limit of the range of *C. b. bryanti* (Bancroft 1923, Grinnell 1928, Rea and Weaver 1990). Specimens from Valle de

Trinidad, though, in the pass between the sierras Juarez and San Pedro Martir, are closest to *sandiegensis*.

Seasonal Status in California

The San Diego Cactus Wren, like all other subspecies of the Cactus Wren, is a sedentary resident. Only short-distance dispersal by immatures from their natal territories is likely. Unitt (1984) reported only two instances of vagrancy of Cactus Wrens even a few miles from sites where they are resident. Field work for the San Diego County bird atlas, 1997-2001, has revealed just two winter records of Cactus Wrens at distances greater than 3 miles from known colonies.

Historical Range and Abundance in California

Because of its restriction to stands of chollas and prickly pears, the San Diego Cactus Wren has always had a rather patchy range (Bancroft 1923). Nevertheless, it was formerly widespread at elevations below 1000 feet in coastal San Diego County, especially in the area now covered by the inner city of San Diego (Rea and Weaver 1990, specimens in San Diego Natural History Museum). It occurred formerly on the south-facing slopes just north of northern San Diego County's coastal lagoons, being eliminated from these by urbanization during the 1980s. Lack of detailed historical information on birds in Orange County prevents a definite statement on the Cactus Wren's past status there. Grinnell and Miller (1944) commented, "range on coastal slope of southern California now much restricted as compared with condition in 1880s and 1890s, owing to great reduction of requisite habitat."

Recent Range and Abundance in California

The San Diego Cactus Wren has an extremely localized distribution. Rea and Weaver (1990) listed 86 sites in California (some of which are close enough to each other to be considered one extended site). They mapped the species as extirpated in the 1980s at 26 of these sites. Subsequent records submitted to the California Natural Diversity Data Base add 8 sites. Field work for the San Diego County bird atlas, 1997-2001, added about 18 additional sites and

relocated the species near 6 sites where Rea and Weaver (1990) thought it extirpated. The "population" at several of these sites, however, consists of as little as a single individual and therefore may be ephemeral or not viable. At Barrett Junction, for instance, I located a single Cactus Wren nest, recently built, on 13 February 2000 but never saw any birds, and the nest, evidently abandoned, deteriorated over the next several months. Near Rea and Weaver's site 38, in La Jolla Valley west of Rancho Bernardo, I found only a single individual on 9 June 1998 in a small cactus thicket that had largely burned.

Numbers in Orange County may be larger than in San Diego County. Ogden Environmental and Energy Services (1992) estimated 1200-1600 individuals in Orange County, though a large fraction of these may be closer to *C. b. anthonyi* than to *sandiegensis.* Gallagher (1997) mapped the Cactus Wren as occurring in 44 of 110 of 5-km by 5-km blocks in Orange County, and listed 10 additional poorly covered blocks where the species could have been missed by the Orange County bird atlas effort. Only 10 of these blocks, though, coincide with locations mapped as *sandiegensis* by Rea and Weaver (1990).

In San Diego County, the San Diego Cactus Wren is concentrated in four regions that may be regarded as the core of the remaining population: southern Camp Pendleton/Fallbrook Naval Weapons Station (70 pairs reported by Mock 1993), Lake Hodges/San Pasqual (90 pairs, Mock 1993), Lake Jennings (25 pairs, Mock 1993), and Sweetwater/Otay (extending from Dictionary Hill on the north to Otay Mesa on the south, from Euclid Avenue on the west to Upper and Lower Otay lakes on the east; 80 pairs, Mock 1993). Other San Diego County sites combined contribute probably fewer than 50 individuals. The total population of the subspecies is now undoubtedly below the 400 pairs estimated by Rea and Weaver (1990).

Ecological Requirements

Rea and Weaver (1990) described the San Diego Cactus Wren's habitat thoroughly. The key habitat element is thickets of chollas (*Opuntia prolifera*) or prickly pear cacti (*O. littoralis*, *O.*

oricola) tall enough (at least 74 cm) to support and protect the birds' nests. In the Lake Hodges/San Pasqual area, Weaver (in Rea and Weaver 1990) found 13 San Diego Cactus Wren territories to range in size from 0.8 to 2.0 hectares, averaging 1.3 hectares. Not all the territory need consist of cactus thickets; D. Bontrager (in Gallagher 1997) found Cactus Wrens in Orange County nesting in relict stands of cactus as small as 0.04 to 0.08 hectare surrounded by grassland. It appears that the precise makeup of the habitat surrounding suitable cactus thickets is not critical. Typically, however, the San Diego Cactus Wren's habitat consists of coastal sage scrub in which cacti are prominent. Suitable conditions are found on south-facing slopes, at bases of hillsides, or in dry washes (Rea and Weaver 1990).

Threats

Habitat destruction in the form of urban sprawl threatens the San Diego Cactus Wren gravely. W. L. Dawson recognized this as early as 1923, and the threat has only intensified since. Currently, massive construction of housing tracts in eastern Chula Vista is taking place in much of the habitat for the Sweetwater/Otay population. The pressure from urbanization in the rest of the subspecies' range is also great. Two freeways currently being built or scheduled for construction, the Foothill Transportation Corridor in southern Orange County and Highway 125 in the Sweetwater/Otay region of southern San Diego County, cut through two of the largest known populations and eliminate occupied habitat. The environmental impact statement for Highway 125 specifies elimination of 11 Cactus Wren territories (V. Marquez pers. comm.). Recent public acquisitions of significant tracts of coastal sage scrub for San Diego County's multiple-species conservation plan include few if any Cactus Wren sites, lying largely too far inland. With the population so reduced and fragmented, the long-term viability of what remains is an open question (Mock 1993).

Rea and Weaver (1990) also identified fire as a threat to the San Diego Cactus Wren, citing Benson (1969) in calling fire "the chief limiting factor in the distribution of cacti in southern California." The long time required for a burned cactus thicket to regrow to a height sufficient for

nesting Cactus Wrens can result in the species' dying out in burned habitat. One year after the Laguna Canyon fire in the San Joaquin Hills, Orange County, the population of Cactus Wrens was down 72% (Bontrager et al. 1995). Burning of San Diego Cactus Wren habitat is of greatest concern on military bases, where artillery starts frequent fires.

Degradation of habitat can happen even in conservation easements, especially where these are adjacent to housing and receive heavy human foot traffic. In Rice Canyon, Chula Vista, in designated open space supporting Cactus Wrens surrounded by recent urbanization, school children were recruited to plant oak trees (V. Marquez pers. comm.)!

Habitat fragmentation may compound the negative effect of habitat destruction. Rea and Weaver (1990) noted that during the 1980s all 26 sites where they documented the bird's disappearance had supported fewer than five pairs and that at 18 of these sites the extent of the habitat still appeared sufficient to support at least one pair. If the habitat is adequate, however, rather isolated populations may persist. At Malcolm X Library in southeast San Diego, in partly degraded sage scrub isolated for decades from the rest of the Sweetwater/Otay population, I found that about six pairs persisted from 1997 through 2001.

A population-viability analysis encompassing the Lake Hodges/San Pasqual, Lake Jennings, and Sweetwater/Otay populations, assuming productivity and survival rates typical for songbirds, estimated extinction probabilities over 200 years ranging from 7% to 35%, variations arising from variations in these assumed rates and whether or not a dispersal rate between the populations of 1% per year is allowed (Mock 1993). Under current plans, however, even these 200 pairs are not sustained. The final multiple-species conservation plan for the region encompassing these three populations specifies that just 60% of the maritime succulent scrub in it will be conserved.

The San Diego Cactus Wren has benefited to some extent of the formal listing of the California Gnatcatcher as threatened, since almost all of the wren's sites also support the

gnatcatcher, but because of the wren's specializations listing remains important. That the threats facing the San Diego Cactus Wren are greater than those facing most listed species has never been refuted. The petition to list the wren as endangered was denied only on the basis of unpublished letters disputing the subspecies' validity and the statement "no apparent morphological or other morphometric differences have been detected to date that distinguish coastal birds from other cactus wrens" (Beattie 1994), in disregard of the evidence of Rea and Weaver (1990). No interpretations other than that of Rea and Weaver have yet been published, and this lack implies that the petition was denied simply because formal listing of the San Diego Cactus Wren as endangered was too inconvenient politically.

Management and Research Recommendations

The recommendations listed by Rea and Weaver (1990) for conservation of the San Diego Cactus Wren apply now more than ever.

- Protect all remaining sites from urbanization and from highway building and widening.
- Restore and enhance (through planting of cacti) sage scrub around current sites.
- Develop a recovery plan that identifies all sites, determines the ownership status and conservation potential of each, and outlines a strategy for the conservation and management of these sites. Between the list of Rea and Weaver (1990), San Diego County bird atlas results, and surveys made by environmental consultants, probably all sites have already been identified, if the results of surveys on private lands can be extracted.
- Put occupied sites into public ownership or conservation easements, even though many of these will fall outside of the framework of San Diego's multiple-species conservation plan and will entail modifications of this plan.
- Experiment with landscaping developed areas near occupied sites with cacti. Though the San Diego Cactus Wren appears far less adaptable to urbanization than the desert

subspecies, its persistence in some isolated pockets of habitat suggest that conservation of patches of occupied habitat within urbanized areas may offer some conservation potential if preservation of large blocks of habitat fails. In southeast San Diego and on Dictionary Hill, San Diego Cactus Wrens make some use of spiny ornamental garden plants (pers. obs).

- Investigate, ideally with whole specimens, the characters of the Cactus Wrens of Orange County. At a minimum, the material needed is rectrices 3-5 from one side of the tail as well as color photographs showing both the upperparts and underparts of fresh-plumaged birds (October-December), taken from directly above and below. A genetic study (Eggert 1997) found evidence of population isolation at a level even finer than the subspecies evident on the basis of external characters.

Monitoring Needs

A complete survey of all sites for the San Diego Cactus Wren is needed urgently, in tandem with an effort to identify all suitable habitat (easily done from existing vegetation maps and possibly aerial photos, on which extensive cactus thickets may be visible). Regular monitoring of the populations on lands owned by government or public-trust agencies (Department of Defense: Camp Pendleton, Fallbrook Naval Weapons Station; city of San Diego: Lake Hodges, San Diego Wild Animal Park; California state parks: San Pasqual Battlefield State Historic Park; Sweetwater Authority: Sweetwater Reservoir; San Diego County parks department: Sweetwater County Park) is especially important so that the long-term viability of wrens inhabiting even conserved habitat can be assessed. Because of the rapidity of decreases documented by Rea and Weaver (1990), this monitoring should be done every three years at the minimum.

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